

Active Service System of New Media Information Knowledge Based on Artificial Intelligence

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Abstract: In the era of rapid development of Internet information technology, Internet communication has even surpassed traditional newspapers, televisions and other media, and has become an important channel for people to communicate with each other. But people's demand for information is increasing day by day, and there are more and more types of information and more and more complex forms of expression. There is an urgent need to establish an active service system for information, so that people can better learn knowledge, master and apply information. Based on the above background, the purpose of this article is to study the artificial intelligence-based network new media information knowledge active service system. This paper analyzes the intelligent information push-pull technology that incorporates artificial intelligence, knowledge discovery and other technologies in detail, and uses this as the theoretical basis. This paper makes a basic content design for the artificial intelligence-based knowledge information active service system. And the system framework and work flow of the system are studied in depth. The agent design method based on JADE (Java Agent Development Framework) is used to design and implement a knowledge information active service system. This paper analyzes the performance of the system and finds that when the number of concurrent users reaches 2000, the server CPU and memory usage rate does not exceed 60%. It can be seen from this that the system can meet actual needs.

1. Introduction

With the promotion and dissemination of new technologies, people's demand for information is increasing, there are more and more types of information, and the forms of expression are becoming more and more complicated. There is an urgent need to establish an active information service system to enable people to better learn knowledge, master and apply information. At present, in the application of domestic information service systems, information retrieval technology is still at the center. According to the query instruction put forward by the user, the content that meets the conditions is searched, the search results are sorted and returned to the user. Combined with the information retrieval rule base established by the system itself, it intelligently analyzes the information input by users, so that users can search for the required information on the Internet conveniently, quickly and automatically.

Information service system has important application value to promote knowledge informatization, promote knowledge publicity, and use rich multimedia means to improve the quality of knowledge service [1]. The information service system adopts the design ideas of intelligent technology and intelligent push-pull technology to realize the active service of knowledge multimedia information [2]. It can provide users with personalized services according to everyone's interests and hobbies, and to some extent meet the differences in user interest needs [3]. At the same time, the user can query relevant knowledge information through the system, and the system will return the multimedia content that the user is interested in according to the user's interest knowledge [4]. This

can save the user's time and energy and provide high-quality knowledge information. The research of this paper has certain theoretical significance and application value for establishing high-quality intelligent knowledge information service.

This paper firstly analyzes the intelligent information push-pull technology in detail, and then uses this as the theoretical basis to design the basic content of the artificial intelligence-based knowledge information active service system, and makes an in-depth study of the system framework and workflow. Using Agent design method based on JADE, the knowledge information active service system is designed and implemented. This paper analyzes the performance of the system and finds that the system can meet the actual needs.

2. Method

2.1 Intelligent Information Push-Pull Technology

The lack of further promotion of the traditional push-pull technology is largely due to its lack of intelligence and the inability to accurately determine the push objects and push content according to user needs, resulting in the blindness of push. The intelligent push-pull technology is based on the traditional push-pull technology, which integrates artificial intelligence, knowledge discovery and other technologies [5]. While sorting the information, combined with the analysis of user needs and interests, the pushed information can better meet the user's personalized needs. Intelligent push technology not only has the advantages of active services, but also has a certain degree of intelligence, which is the technical basis for further providing personalized active information services [6]. In the specific application process of intelligent push-pull technology, there are two core issues that need to be resolved, namely, push content and push target selection.

However, the rapid development of artificial intelligence and knowledge discovery technology makes it possible to solve the above problems [7]. First, data mining technology can preprocess a large amount of information collected, extract representative information that reflects its key features, and further classify and archive this information, providing a good basis for information retrieval. On the other hand, knowledge discovery technology can analyze the user's personal information and user behavior, extract the user's interest, and push related content accordingly [8].

2.2 Basic Design of Knowledge Information Active Service System Based on Artificial Intelligence

In view of the large demand for information acquisition, knowledge learning, intelligent services, decision support, etc., an artificial intelligence-based information knowledge active service system should include the following basic functions:

The system uses text-based human-computer interaction to match and retrieve the user's basic information knowledge, so that users can obtain the required information knowledge; the system integrates and organizes various types of information knowledge bases for users[9], so that users can obtain accurate and relevant Information knowledge; the system collects and extracts shared information knowledge for users to help users obtain a variety of information knowledge; the system analyzes and discriminates the user's knowledge level and learning emotions, proactively raises relevant questions, guides users to enlighten and improve The user's information acquisition ability and knowledge level; the system automatically acquires new information knowledge from the user's human-machine dialogue, corresponding synthesis, reasoning, extraction and other processing processes, expanding the system's own database and knowledge base. The active service system of information knowledge involves a large amount of data, information and knowledge, and various types of libraries need to be established to facilitate matching, retrieval, synthesis, extraction and reasoning [10].

This system mainly includes the following parts:

Design of basic information base. Database design for information knowledge base; database design for common knowledge information issues; simple answer vocabulary design; active dialogue vocabulary design; database design related to information knowledge structure.

Scalable database design. User information knowledge base design; expert information knowledge base design; network information knowledge base design.

Knowledge base design: information knowledge classification keyword database design; sentiment classification keyword database design information knowledge structure rule database design.

3. Experiment

3.1 System Development Environment

The system in this paper adopts Agent design method based on JADE (Java Agent Development Framework). JADE is an intelligent development platform for developing standard software framework based on Agent and compliant with FIPA intelligent multi-agent system. JADE is responsible for completing transactions independent of specific applications, such as message passing, encoding and parsing, and agent life cycle management. Through this middleware, the development of multiple intelligent systems is greatly simplified.

3.2 Basic Process of Active Service System

The system processes user input according to the following steps:

If the user greets in a general sense, the system will find the most similar words in the fixed language library to answer.

Otherwise, the system matches the keywords of the input question with the keyword database of information knowledge classification. If there is a perfect match, the information is directly extracted from the basic database of information knowledge through the information knowledge structure association library. If a basic match is reached and the system recognizes the degree of matching, it will extract information from the basic database of information knowledge to answer according to the highest degree of matching; if the parts match, the system will extract the most similar questions from the basic database of information knowledge and let the user do make choices to get user satisfaction.

For the results dissatisfied with the user, the system constructs rules from information knowledge and extracts rules from the rule base according to the way the expert system's human-machine interface talks to the user, and the user satisfaction is very high, thus drawing a conclusion. The common questions in the information basic information database, the answering system of the knowledge base and the extended information database, once again obtain user satisfaction. In order to make users still unsatisfied, the system uses a search engine to extract the information with the highest degree of matching from online search tools such as search knowledge, search bases and search encyclopedias, etc., to obtain user satisfaction again. If the user is satisfied, the answer information can be stored in the network information knowledge database.

In order to make users still unsatisfied, the system again uses an online search engine to extract information from professional forums that match information knowledge, combine, organize, and send it to users, again obtaining user satisfaction. If the user is satisfied, the answer information can be stored in the network information knowledge database.

If the user is still not satisfied and urgently needs to solve the problem, the system will send the problem to the relevant professional experts on the Internet, and if the result is obtained soon, it will be sent to the user in real time. If this information is not immediately available, the user's question will be stored in the database, and the next time the user enters the system, the answer to the question can be obtained. If the user is satisfied, the answer information can be stored in the network information knowledge database.

For users who are still dissatisfied with the results, extract relevant questions from the active language database and ask the questions to the users. From the user's answers, you can get the user's views and understanding of the question. Through discrimination and classification, the system stores relatively satisfactory answers in the user information knowledge database.

The system analyzes the satisfaction of the information received by users, proactively gives relevant

expressions, and makes explanations to users.

The system waits for users for a long time, actively extracts common greetings from the active dialogue corpus, and communicates with users on related issues.

The system evaluates and scores the information in the basic database of information knowledge, database of frequently asked questions of information knowledge, user information knowledge database, expert information knowledge database and network information knowledge database.

The system adds, modifies, deletes and maintains various databases through manual operations.

4. Discussion

4.1 Experimental Results and Analysis

When performing performance testing, I chose to use LoadRunner to test various functions of the system. During the test, I simulated concurrent users 100, 500, 1000, 1500, and 2000 to perform concurrent tests, and tested the functional modules with high frequency of use. For 10 minutes, record the CPU and memory usage of the system server when each function is running. The test results are shown in Table 1 and Figure 1:

Table 1. Experimental results

System Concurrency	100	500	1000	1500	2000
Server CPU usage(%)	7.71	17.02	30.13	39.08	48.23
Server RAM usage(%)	8.04	20.01	33.35	38.01	50.23

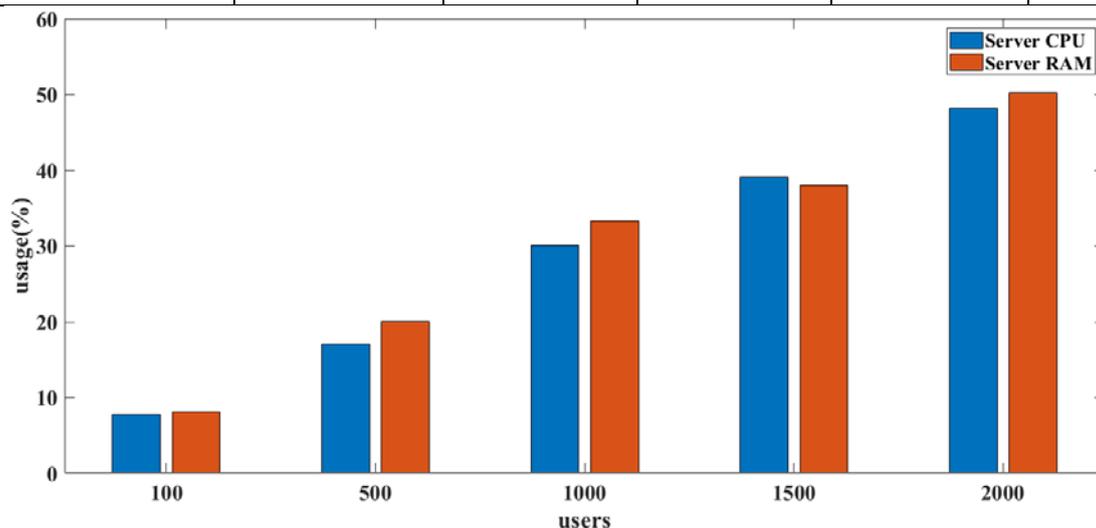


Figure 1. Experimental results

4.2 Methods to Promote the Construction of an Active Service System for New Media Information Knowledge on the Internet

(1) Stabilize the team and improve the quality of information personnel

At present, in terms of the quality of personnel engaged in knowledge and information, the overall level of information collection, information secondary analysis and information processing is not high, the concept before information mining is not high, and the number of personnel is also seriously insufficient. At the same time, information workers still lack market awareness, especially foreign market awareness, which restricts the quality and level of trust and services to a certain extent. Therefore, in the future development, we must further strengthen our own strength, at the same time master the training of existing personnel's computer, informatics, marketing and other knowledge, build an information team with strong business quality and master multiple skills, truly to achieve a full range of knowledge and information services.

(2) Strengthen the infrastructure construction of knowledge and technology information system

First, it is necessary to establish and improve the national, provincial, city, and county-level network

center platform, complete the corresponding network and computer hardware equipment, support the center platform that supports software development at all levels, and provide unified and compatible operations, and establish a centralized network management and security system. The second is to rely on national public communication facilities to build efficient and smooth channels of knowledge information dissemination, and realize a computer network centered on the China Knowledge Information Network and supplemented by provincial, prefecture, city, and county information websites. All provinces, cities, and autonomous regions make comprehensive use of financial resources, increase investment, and strengthen the construction of knowledge, scientific and technological information, and system information infrastructure.

(3) Pay attention to the construction of network platforms and promote the development of knowledge network informatization

Strengthen the construction of knowledge information networks, build information platforms, and provide strong network support for knowledge information services. The column setting should include columns such as efficient knowledge, knowledge law enforcement, agricultural technology promotion, standardized production, and knowledge industrialization. Topics such as knowledge forums, policies and regulations, and knowledge information. In addition to building knowledge information websites, efforts should be made to establish a vertical and horizontal combination of comprehensive knowledge technology network information service system. Vertically formed a systematic knowledge information service system.

(4) To meet the needs of comprehensive service of scientific and technological information, develop the correct knowledge base

To promote the industrialization of the knowledge and technology information service industry, we must have our own excellent information products, establish market awareness, and develop and produce an information database that meets the needs of different users throughout the entire process of knowledge, technology, information, and services. At present, the application research of computers in the field of knowledge mainly focuses on six aspects of knowledge data and image processing, knowledge system simulation, knowledge expert system, knowledge computer network, knowledge decision support system and knowledge information real-time processing. All localities should reasonably prioritize the construction of knowledge information bases according to their own knowledge.

Conclusion

The artificial intelligence-based information knowledge active service system has the characteristics of personalized active service and can meet the personalized information needs of different users. It has become an important and valuable research topic. It fundamentally solves the problems encountered in the process of information services, that is, how to extract useful information from massive information, and how to provide personalized active information services for different users. Information and knowledge active service intelligent system will be very helpful to make full use of the existing shared information knowledge resources, provide people with the latest information knowledge and the most convenient information knowledge service, and have important social and economic value.

References

- [1] Staff C. Artificial Intelligence[J]. communications of the acm, 2017, 60(2):10-11.
- [2] Garnham A. Artificial intelligence. An introduction. Kuenstliche Intelligenz. Eine Einfuehrung. [J]. group & organization management, 2017, 31(1):27-39.
- [3] Pei Wang, Kai Liu, Quinn Dougherty. Conceptions of Artificial Intelligence and Singularity[J]. Information (Switzerland), 2018, 9(4):79.
- [4] Nicholas Ogot, JO Pittchar, CAO Midega. Impact of push-pull technology on the nutritional status of farmers' children in Western Kenya[J]. African Journal of Food, Agriculture, Nutrition and

Development, 2017, 17(4):12953-12969.

[5] Bora Ataman, Barış Çoban. Counter-surveillance and alternative new media in Turkey[J]. Information Communication and Society, 2018, 21(1):1-16.

[6] Xiaojun Zhang, Viswanath Venkatesh. A Nomological Network of Knowledge Management System Use: Antecedents and Consequences[J]. MIS Quarterly, 2017, 41(4):1275-1306.

[7] Yumiko MOTOMURAKINOSHITA. The Growth of Service Economy: The Impacts of Information Technology (IT) and Knowledge-Intensive Services (KIS) on Productivity in Japan's Service Sector[J]. Journal of Socio Informatics, 2017, 5:37-50.

[8] Jing Shanna. Construction of Adult Education Information System Based on Knowledge Management [J]. Journal of Nanjing Radio & TV University, 2017 (2): 66-68.

[9] Duan Jingbo, Pan Huiping. Research on the Credit Management Information System Based on Zhaoqing Tourism [J]. Computer Knowledge and Technology: Academic Edition, 2019 (6Z): 60-61.

[10] Chai Zheng, Qu Lili. Review of Port Security and Emergency Logistics Management Information System Research [J]. China Management Informatization, 2017, 20 (11): 48-52.